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Research Article

Language Learning Across the Life Course: A Qualitative Study of Digital Practices, Educational Transitions, and Intergenerational Experiences

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Abstract

Digital technologies have transformed language learning by extending opportunities beyond formal education and promoting lifelong engagement. Despite growing research, studies often focus on specific contexts and short-term outcomes, offering limited insights into the longitudinal development of language learning across life stages. This study addresses this gap by using a qualitative life-history approach, informed by life-course theory, to explore how individuals experience and sustain digital language learning. Data were collected through semi-structured interviews with participants from various age groups and analyzed with narrative thematic analysis. The results show that digital language learning is a dynamic process, starting with early socialization in family and school, intensifying during key transitions, and continuing into adulthood through self-directed digital engagement. Intergenerational relationships and unequal access to digital resources influence learners' opportunities, motivations, and orientations. These findings suggest that digital technologies not only enhance access and flexibility but also allow learners to adapt their language learning amid life disruptions. By integrating life-course and intergenerational perspectives, this study expands research that typically views learning as context-dependent. It offers implications for educational policies and digital learning frameworks, highlighting the need to recognize language learning as a lifelong process and address digital and intergenerational inequalities for inclusive, sustainable language learning.

Keywords: Digital language learning; Intergenerational learning; Life-course perspective; Lifelong learning

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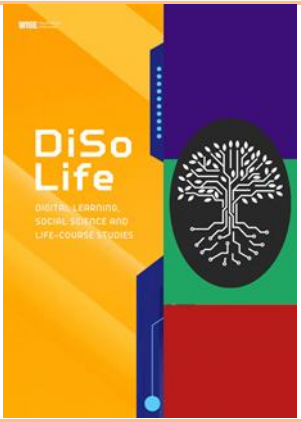

INTRODUCTION

Language learning has undergone a profound transformation in the digital era due to the pervasive integration of online platforms, mobile technologies, artificial intelligence, and digitally mediated communication tools into everyday life. Digital technologies are no longer auxiliary to language education; they have become central to how languages are learned, practiced, and extended across diverse socio-cultural contexts, enabling flexible engagement outside formal classroom environments. Empirical work in digital language learning demonstrates that web-based platforms, mobile-assisted language learning (MALL), and interactive multimedia contexts can promote learner autonomy, adaptive practice, and personalized feedback, thus significantly expanding access and participation among learners of different ages and backgrounds [1], [2], [3]. Moreover, research indicates that digital language learning enriches learners' experiences by supporting multimodal interaction, collaboration, and immersive engagement beyond traditional instructor-led settings [4], [5], [6]. This shift signifies that language learning must now be conceptualized as a dynamic, lifelong process embedded within broader digital ecosystems rather than as a bounded activity confined to discrete educational stages.

Despite the growing interest in digital language learning, the extant literature remains disproportionately focused on specific educational contexts or learner cohorts, such as primary, secondary, or university settings, often using cross-sectional designs that offer limited insight into how language learning evolves over time [7], [8], [9], [10]. Furthermore, many studies emphasize immediate pedagogical outcomes such as vocabulary acquisition or motivation gains in online courses without adequately addressing how learners' language practices and digital engagements unfold across different life stages or socio-digital environments. Research in this vein tends to treat learners as static entities within fixed learning contexts, thereby neglecting the longitudinal processes through which individuals navigate language learning across educational transitions, occupational experiences, and changing life circumstances. Hence, the conceptualization of digital language learning in most scholarship remains temporally fragmented, overlooking the continuity and cumulative nature of learners' experiences throughout the lifespan.

In parallel, life-course studies in the social sciences provide a valuable lens for understanding how individuals' trajectories of learning are shaped by historical contexts, critical transitions, and linked lives within families and communities [10], [11], [12], [13]. This theoretical orientation emphasizes that human development including educational attainment, occupational trajectories, and social participation occurs across interconnected life stages influenced by both structural constraints and personal agency. Life-course concepts such as trajectories, transitions, and turning points have been applied in various domains, including health, work, and care, to trace how earlier experiences influence outcomes at later stages [14], [15], [16], [17]. Applying a life-course perspective to language learning therefore offers the potential to integrate temporal depth into analyses of learner engagement, capturing how digital practices interact with life transitions such as shifting from formal education into the workforce, entering new social roles, or adapting to evolving familial responsibilities. However, explicit applications of life-course frameworks in digital language learning research remain limited, with few studies systematically exploring how digital language practices are constituted through accumulative life experiences across age cohorts.

Intergenerational dimensions are particularly underexplored in the current body of research although they are theoretically significant for understanding language learning as a socially embedded phenomenon. Intergenerational learning studies primarily focused on knowledge

transfer and educational programs across age groups highlight that learning interactions between individuals of different generations can foster reciprocal skill development, social cohesion, and shared meaning-making processes [18], [19], [20], [21]. In family and community contexts, intergenerational relations often shape aspirations, identities, and learning orientations, including domains such as language socialization and literacy practices [22], [23], [24], [25]. While research on intergenerational dynamics in education has examined caregiver child interactions and pedagogical interdependencies, there is scant work interrogating how intergenerational contexts mediate digital language learning trajectories across the lifespan, especially in relation to identity, motivation, and access to digital resources.

Moreover, life-course perspectives emphasize that learning and identity development are not merely sequential but cumulative, with earlier life experiences forming the foundation for later adaptations and engagements. This cumulative aspect is central to understanding how language learning practices are anchored in earlier habits, sociocultural norms, and existing competencies, and how digital technologies may amplify or disrupt these trajectories [26], [27], [28]. For example, the Digital Visitors and Residents framework illustrates how learners navigate digital spaces in ways that reflect not only their technological familiarity but also their educational and life experiences, suggesting that modes of engagement with digital tools are shaped by broader trajectories that unfold over time [29], [30]. Such dynamic conceptualizations reinforce the need for longitudinal, qualitative inquiry into digital language learning that can foreground learners' narratives and contextualize their evolving practices within linked social configurations.

In addition to the need for temporal depth, existing scholarship on digital language learning exhibits notable gaps in addressing diversity across life stages, particularly in adulthood and later life. While language learning has traditionally been associated with institutionalized settings for younger learners, studies have begun to recognize the value of lifelong language learning for cognitive well-being, socio-affective outcomes, and active ageing [31], [32], [33], [34]. Research on language learning in later life, for example, indicates that participation in language learning can enhance motivation and well-being among older adults, highlighting the potential of lifelong engagement with language for personal development and quality of life. However, these studies remain relatively isolated and do not adequately integrate the implications of digital engagement across the adult lifespan, leaving unresolved questions about how digital learning environments support or constrain language acquisition and practice for learners beyond formal educational stages.

Critically, digital language learning research has yet to fully articulate how life-course transitions and intergenerational contexts coalesce to shape the continuous development of language proficiency, digital literacy, and learner identity. Most studies treat digital learning episodes as discrete events rather than components of longitudinal narratives that intersect with learners' evolving socio cultural roles and life responsibilities. There is also limited empirical understanding of how generational differences in access to digital technologies rooted in socio-economic status, cultural capital, and educational opportunities mediate learners' engagement with digital language practices across the lifespan. This oversight has significant implications for equity, inclusion, and policy, as differential digital access may perpetuate or deepen learning inequalities across age cohorts and socio-demographic groups.

Against this backdrop, the present study adopts a qualitative life-history approach to examine language learning as a lifelong, digitally mediated process situated within educational

transitions and intergenerational contexts. By focusing on learners' narrative accounts of their language learning trajectories from childhood through adulthood and into later life, this research seeks to illuminate how digital practices intersect with life-course events, shape learning identities, and reflect intergenerational influences. In doing so, it aims to address critical gaps in the literature by integrating temporal continuity, socio-digital environments, and intergenerational dynamics within a holistic analytical framework. Specifically, the study seeks to answer the following questions: (1) How do individuals narrate their experiences of language learning across different stages of life in digital contexts? (2) How do digital technologies interact with life transitions to influence learners' engagement with language learning? (3) How do intergenerational contexts shape opportunities, motivations, and identities related to digital language learning? Through this investigation, the study contributes to interdisciplinary discourse at the intersection of language education, digital learning, and life-course studies, providing nuanced insights relevant for educators, policymakers, and researchers invested in promoting lifelong and inclusive language learning in the digital age.

METHODS

To address the complexity of language learning as a lifelong, digitally mediated, and socially situated process, this study adopts a research approach capable of capturing both temporal depth and contextual nuance. Given that language learning trajectories are shaped by cumulative experiences, critical transitions, and intergenerational influences, a methodological framework is required that moves beyond snapshot accounts of learning and allows for an exploration of how individuals make sense of their experiences across time. Such an approach must be sensitive to learners' subjective meanings while remaining attentive to the broader socio-educational structures in which these meanings are embedded.

Qualitative inquiry offers a particularly appropriate methodological orientation for investigating these dynamics, as it enables an in-depth examination of learners' narratives, identities, and evolving practices in relation to digital environments [35], [36], [37]. In contrast to methods that prioritize measurable outcomes at discrete points in time, qualitative approaches emphasize process, continuity, and reflexivity key dimensions for understanding language learning from a life-course perspective. By foregrounding participants' lived experiences and narrative constructions, this study seeks to illuminate how digital language learning is intertwined with educational transitions, changing social roles, and intergenerational contexts. The following section therefore outlines the methodological design adopted to explore these issues, detailing the research approach, participants, data collection procedures, and analytical strategies that underpin the study.

Research Design

This study employed a qualitative research design grounded in a life-history and life-course perspective to explore how language learning experiences are constructed, negotiated, and transformed across different stages of life within digitally mediated environments. Qualitative life-history research is particularly suitable for investigating longitudinal learning trajectories, as it enables the examination of individuals' narrated experiences within broader socio-historical and institutional contexts [14], [38], [39], [40]. By foregrounding participants' narratives, this approach allows for an in-depth understanding of how language learning practices are shaped by educational transitions, digital technologies, and intergenerational relations over time. The life-course

framework further emphasizes temporal continuity, critical transitions, and the interdependence of individual agency and structural conditions, making it an appropriate lens for analyzing language learning as a cumulative and socially embedded process rather than a series of isolated educational events [41], [42], [43].

Participants and Context

Participants were selected using purposive sampling to capture diverse life-course trajectories and generational experiences of digital language learning. The sample consisted of 24 participants drawn from different age cohorts, ranging from early adulthood to later adulthood, who had engaged in language learning across multiple stages of life. This sampling strategy was designed to ensure variation in educational background, occupational pathways, and exposure to digital technologies, which is essential for life-history research aimed at identifying patterns across heterogeneous experiences [44], [45]. The study was conducted in a multilingual and digitally expanding educational context, where formal instruction, informal learning, and online language practices coexist. Such a context provides a rich empirical setting for examining how digital language learning intersects with broader socio-educational transformations and life transitions.

Data Collection

Data were collected primarily through in-depth, semi-structured life-history interviews conducted over two stages. The first stage focused on participants' early encounters with language learning, including family influences, schooling experiences, and initial exposure to digital technologies. The second stage explored participants' subsequent educational transitions, workplace-related language use, and engagement with digital platforms for language learning in adulthood. Life-history interviews were chosen because they facilitate retrospective reflection while allowing participants to construct coherent narratives that link past experiences with present practices and future aspirations [7], [46]. Each interview lasted between 60 and 90 minutes and was conducted either face-to-face or via secure online conferencing platforms, depending on participants' availability and preferences. All interviews were audio-recorded with participants' consent and transcribed verbatim for analysis. Supplementary reflective prompts were used to encourage participants to elaborate on critical turning points, intergenerational influences, and digitally mediated learning practices.

Data Analysis

Data analysis followed a narrative thematic approach, combining inductive coding with life-course-informed analytical categories [47], [48], [49], [50]. Initially, transcripts were read repeatedly to achieve immersion and to identify preliminary codes related to language learning experiences, digital practices, and life transitions. These codes were then organized into broader narrative themes that reflected temporal progression, such as early language socialization, educational transitions, and adult digital learning practices. Narrative analysis was employed to preserve the coherence of participants' life stories while enabling cross-case comparison across generational cohorts [51], [52]. Throughout the analysis, attention was paid to how participants positioned themselves in relation to digital technologies, family expectations, and institutional structures, thereby linking individual narratives to wider social processes. Analytical rigor was enhanced through iterative

coding, peer debriefing, and reflexive memo writing, which allowed the researcher to critically examine emerging interpretations and theoretical assumptions.

Trustworthiness and Ethical Considerations

To ensure trustworthiness, the study adhered to established qualitative quality criteria, including credibility, dependability, and reflexivity. Credibility was enhanced through member checking, whereby participants were invited to review summary interpretations of their narratives to confirm accuracy and resonance with their experiences. Dependability was addressed by maintaining an audit trail documenting data collection procedures, analytical decisions, and revisions to coding frameworks. Reflexivity was embedded throughout the research process, with the researcher continuously reflecting on positionality and its potential influence on data interpretation [10]. Ethical approval was obtained prior to data collection, and all participants provided informed consent. Pseudonyms were used to protect participants' identities, and data were stored securely in accordance with institutional ethical guidelines.

RESULTS AND DISCUSSION

Result

The analysis of participants' life-history narratives revealed four interrelated themes that illustrate how digital language learning practices are shaped across the life course. These themes reflect temporal continuity, critical transitions, and intergenerational influences that structure participants' engagement with language learning in digitally mediated environments. Table 1 provides an overview of the emergent themes, their defining characteristics, and illustrative examples.

Table 1. Overview of Themes Emerging from Life-History Narratives

Theme	Life Stage Focus	Key Characteristics	Illustrative Digital Practices
Early Language Socialization	Childhood–Adolescence	Family influence, school exposure, initial digital encounters	Educational apps, YouTube, online games
Educational Transitions	Adolescence–Early Adulthood	Shifts between educational levels, increased autonomy	Learning platforms, online courses, social media
Intergenerational Contexts	Across Life Stages	Family expectations, generational digital divides	Parental guidance, peer-supported learning
Adult and Lifelong Learning	Adulthood–Later Life	Instrumental and personal motivations, self-directed learning	Mobile apps, professional platforms, informal online communities

Early Language Socialization in Digital Contexts

Participants' narratives indicated that early language learning experiences were strongly shaped by family environments and formal schooling, with digital technologies playing an increasingly prominent role from a young age. Many participants recalled early encounters with foreign languages through school curricula supplemented by digital resources such as educational videos, online games, and mobile applications. These early digital practices were often mediated by parents or teachers, who introduced technology as a supportive tool rather than a primary learning environment. Participants emphasized that such early exposure fostered familiarity with both the

target language and digital tools, creating a foundation for later autonomous learning. However, access to digital resources during this stage varied considerably, reflecting broader socio-economic and generational differences within families.

Educational Transitions and Expanding Digital Engagement

A central theme across narratives was the role of educational transitions particularly the move from secondary to higher education in reshaping language learning practices. Participants described this period as a turning point marked by increased independence and intensified use of digital platforms for language learning. Online learning management systems, video-based tutorials, and social media emerged as key resources for academic and communicative purposes. Digital environments were perceived as offering flexibility and immediacy, enabling participants to tailor learning activities to their evolving academic and personal goals. These transitions were also associated with a shift from teacher-directed instruction toward self-regulated and interest-driven learning, highlighting the dynamic interplay between institutional structures and individual agency.

Intergenerational Influences on Language Learning Trajectories

Intergenerational contexts emerged as a significant factor shaping participants' language learning experiences across the life course. Participants frequently referenced parental attitudes toward education and technology as influential in shaping their motivation and access to digital learning opportunities. While some participants benefited from supportive family environments that encouraged language learning and digital experimentation, others encountered constraints stemming from limited digital literacy among older family members. Peer networks often compensated for these limitations, providing informal support and shared learning opportunities. These narratives illustrate how intergenerational relationships can both enable and constrain digital language learning, reinforcing the importance of relational contexts in shaping learning trajectories.

Adult and Lifelong Digital Language Learning

In adulthood, participants' engagement with language learning became increasingly self-directed and purpose-driven, often linked to professional development, migration experiences, or personal interests. Digital technologies were central to sustaining language learning during this stage, particularly as formal educational opportunities became less accessible. Participants highlighted the convenience of mobile applications, online communities, and professional platforms as tools for maintaining and developing language proficiency. Notably, language learning in adulthood was frequently described as non-linear, characterized by periods of intensified engagement followed by interruption due to work or family responsibilities. Nevertheless, digital environments enabled participants to re-engage with language learning at different points, underscoring the adaptability of digital practices across the lifespan.

Discussion

The findings of this study contribute to and extend existing scholarship on digital language learning by situating learners' experiences within a life-course and intergenerational framework. Consistent with prior research on language learning beyond formal educational settings, participants' narratives demonstrate that digital technologies play a critical role in enabling sustained engagement with language learning across diverse contexts and stages of life [53], [54], [55]. Previous studies have

established that online platforms, mobile applications, and social media environments support learner autonomy, access, and agency by allowing learners to pursue personalized goals and authentic communicative practices outside institutional classrooms [56], [57], [58]. The present study corroborates these findings by showing that participants across different life stages relied on digital tools to supplement or replace formal instruction. However, unlike much of the existing literature that treats informal digital learning as episodic or context-specific, this study demonstrates that such practices are embedded within longitudinal trajectories that evolve in response to life transitions, responsibilities, and shifting social roles, thereby extending current conceptualizations of digital language learning.

In relation to educational transitions, the findings align with research that highlights transitions as critical moments in shaping learning trajectories and language practices. Studies on language and life-course transitions emphasize that shifts between educational levels or from education to employment require learners to renegotiate their linguistic repertoires, identities, and learning strategies [59], [60], [61]. Participants in this study similarly described transitions particularly from secondary education to higher education and from education to the workplace as turning points marked by intensified engagement with digital language learning resources. These findings support earlier work suggesting that digital environments provide continuity during periods of institutional change by offering flexible and self-directed learning opportunities. At the same time, the present study extends this body of research by demonstrating that learners' capacity to navigate such transitions is shaped by accumulated digital experiences developed earlier in life, underscoring the cumulative nature of digital language learning across the life course.

The intergenerational dimension identified in this study further enriches sociocultural perspectives on language learning and identity. Research on identity and investment in language learning has consistently shown that access to linguistic resources and learning opportunities is mediated by social relations, power structures, and historical conditions [62]. Participants' narratives echo these insights by illustrating how parental attitudes toward education, family language practices, and generational differences in digital literacy influenced their language learning trajectories from childhood into adulthood. While previous studies have acknowledged the role of family background in shaping educational outcomes, they have rarely examined intergenerational dynamics in relation to digital language learning explicitly. By foregrounding intergenerational contexts, this study extends sociocultural theory by demonstrating how linked lives a central concept in life-course theory operate within digitally mediated language learning environments [63], [64], [65].

The findings also resonate strongly with research on digital inequality and its cumulative effects over time. Studies on the digital divide emphasize that disparities in access, skills, and social support can result in reinforcing cycles of advantage and disadvantage across the lifespan [59], [60], [61]. Participants' accounts in this study reveal similar patterns, where early access to digital resources and supportive learning environments facilitated sustained engagement with language learning, while limited access constrained opportunities and required learners to rely on peer networks or informal strategies. These findings align with existing work on digital inequality [62], [63], [64] but extend it by explicitly linking digital disparities to language learning trajectories across multiple life stages. In doing so, this study highlights the importance of addressing digital equity not only as a technological issue but also as a longitudinal educational concern with implications for lifelong language development.

With regard to adult and lifelong language learning, the findings complement research emphasizing the motivational, instrumental, and affective dimensions of language learning in adulthood [61], [62], [66]. Prior studies have shown that adult learners often engage in language learning for career advancement, migration, or personal enrichment, and that digital platforms play a crucial role in enabling such engagement amidst competing work and family responsibilities [3], [6]. Participants in this study similarly described how digital technologies allowed them to re-enter language learning at different points in adulthood, often after periods of interruption. This supports lifelong learning frameworks that emphasize flexibility and adaptability across the lifespan [9], [15]. However, the present study extends this literature by illustrating how adult language learning is deeply shaped by earlier educational and intergenerational experiences, suggesting that lifelong learning should be conceptualized as a continuation of prior trajectories rather than as a distinct or isolated phase.

In contrast to studies that focus primarily on the effectiveness of specific digital tools or instructional interventions, this research adopts a holistic perspective that foregrounds learners' lived experiences and narrative constructions. While mobile-assisted language learning research has generated valuable insights into pedagogical design and learning outcomes [58], [59], [60], it often treats technologies as discrete and bounded interventions. The findings of this study challenge such approaches by demonstrating that learners' engagement with digital tools is fluid, context-dependent, and shaped by evolving identities, responsibilities, and social relationships across time. This perspective aligns with calls for more learner-centered and context-sensitive approaches in digital language learning research [2], [4], while providing empirical evidence of how such approaches can capture the complexity of learning across the life course.

The novelty of this study lies in its explicit integration of digital language learning research with life-course theory and intergenerational analysis. While previous studies have examined informal language learning, learner autonomy, and digital practices [61], [62], [66], few have conceptualized language learning as a life-course phenomenon that unfolds across interconnected stages of life and relational contexts. By employing a qualitative life-history approach, this study offers a nuanced understanding of how digital language learning trajectories are constructed, interrupted, and reconfigured over time. The explicit attention to intergenerational influences further distinguishes this research from existing literature, providing new insights into how family dynamics and generational differences in digital literacy shape learners' engagement with digital language learning opportunities.

The implications of these findings are significant for theory, methodology, and practice. Theoretically, the study demonstrates the value of incorporating life-course concepts such as trajectories, transitions, and linked lives into applied linguistics and digital language learning research. Methodologically, it highlights the potential of qualitative life-history approaches to capture temporal depth, relational dynamics, and learner meaning-making processes that are often overlooked in cross-sectional studies. Practically, the findings suggest that educators and policymakers should design digital language learning initiatives that support continuity across life stages and address intergenerational and digital inequalities. Educational policies that recognize language learning as a lifelong process may foster more inclusive and sustainable learning ecosystems, particularly in digitally diverse societies.

Despite its contributions, this study has several limitations. First, the reliance on retrospective life-history narratives may introduce recall bias, as participants' accounts are shaped

by present perspectives and selective memory. Second, the qualitative and context-specific nature of the study limits statistical generalizability, although the findings offer analytical insights applicable to similar socio-digital contexts. Third, the study focuses primarily on learners' narratives and does not incorporate longitudinal observation or objective measures of language proficiency development. Future research could address these limitations by integrating life-history approaches with longitudinal mixed-methods designs, ethnographic observation, or digital trace data to further elucidate how digital language learning unfolds across the life course.

CONCLUSION

This study advances understanding of digital language learning by conceptualizing it as a life-course process shaped by cumulative experiences, educational transitions, and intergenerational relations rather than as a set of isolated or stage-bound learning events. Through qualitative life-history narratives, the findings reveal that learners' engagement with digital language practices is dynamically reconfigured across different phases of life, reflecting the interplay between early language socialization, institutional pathways, family influences, and evolving socio-digital environments. By tracing these longitudinal trajectories, the study extends existing research on digital and informal language learning, which has predominantly emphasized short-term pedagogical outcomes or discrete learning contexts, and demonstrates how digital technologies support continuity, re-entry, and adaptation in language learning amid life transitions and disruptions. The explicit integration of life-course theory into applied linguistics provides a robust analytical framework for capturing temporal depth, relational embeddedness, and learner agency, thereby enriching theoretical debates on lifelong learning and digital education. Methodologically, the study underscores the value of qualitative life-history approaches for illuminating the meanings learners attribute to their experiences over time, offering insights that are often inaccessible through cross-sectional or outcome-oriented designs. Practically, the findings highlight the need for educational policies and digital learning infrastructures that recognize language learning as a lifelong, socially situated process and that address intergenerational and digital inequalities to support inclusive participation across the lifespan. Collectively, this study contributes to interdisciplinary scholarship by offering a holistic perspective on digital language learning that foregrounds continuity, transformation, and social connectedness, and by laying the groundwork for future research that further explores longitudinal, intergenerational, and context-sensitive dimensions of language learning in digitally mediated societies.

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AUTHOR CONTRIBUTION

H.A. conceptualized the study, designed the methodology, and conducted the data collection. Analyzed the data and drafted the manuscript. Coordinated the overall project and supervised the implementation of the research. **O.O.** assisted in data collection and provided substantial input into the data analysis. Contributed to the literature review, particularly on life-course theory and intergenerational learning. Revised the manuscript and contributed to the final editing process.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DECLARATION OF USE OF AI IN SCIENTIFIC WRITING

The authors declare that artificial intelligence (AI) tools were used during the preparation of this manuscript solely to support language refinement, clarity, and coherence of the text. The use of AI was limited to assisting with grammatical editing, stylistic improvements, and the organization of ideas, without influencing the scientific content, research design, data analysis, or interpretation of results. All substantive intellectual contributions, including the formulation of research questions, methodological decisions, analysis of findings, and conclusions, were conducted entirely by the authors. The authors take full responsibility for the accuracy, originality, and integrity of the content presented in this manuscript and confirm that the use of AI complies with the ethical guidelines and policies of the target journal.

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